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CLAIMS

[Claim(s)]

[Claim 1] The server which receives the image data the printing command transmitted from a terminal unit and for printing, and at least one printer equipment connected to said server through the circuit are included. Said server Based on the printing command from said terminal unit, the inquiry signal of device information is outputted through a circuit. A printer server means to determine the printer equipment of ** for print-data transmission based on the device information received from each device connected to the circuit according to said inquiry signal, An image-processing server means to transmit the print data which perform data-conversion processing which changes the image data from said terminal unit into print data, and are generated by this data-conversion processing towards said determined printer equipment through a circuit, An implication and said printer equipment answer the inquiry signal of said device information. The network system characterized by including a device information transmission-control means to transmit device information including the classification information on a self-opportunity to said server, and a printing means to print the print data from said image-processing server means received through a circuit.

[Claim 2] In claim 1, said server for every printer equipment of a different classification The storage means which memorized beforehand the data-processing program for changing the capacity information and the image data showing printing capacity into print data is included. Said printer server means It is based on the situation of the load of each of said printer equipment, and said capacity information read from said storage means corresponding to said classification information. It is the network system which determines the printer equipment of ** for print-data transmission, and is characterized by said image-processing server means performing data-conversion processing which changes said image data into print data using the data-processing program corresponding to the classification of said determined printer equipment.

[Claim 3] In either of claims 1 and 2 the printer server means of said server Based on the printing command from a terminal unit, through a circuit, even if there is little other server or printer equipment, the inquiry signal of device information is outputted towards one of devices. It is based on the device information received from other devices connected to the circuit according to said inquiry signal. One of devices is determined that there is little other server which shares said data-conversion processing, or printer equipment. The image data shared with an assignment command towards the determined device is transmitted. The image-processing server means of said server The network system characterized by transmitting the print data which perform data-conversion processing of image data

shared based on said assignment command, and are generated by this data-conversion processing towards said determined printer equipment through a circuit.

[Claim 4] In either of claims 1-3 the printer server means of said server Based on the printing command from a terminal unit, through a circuit, even if there is little other server or printer equipment, the inquiry signal of device information is outputted towards one of devices. It is based on the device information received from other devices connected to the circuit according to said inquiry signal. The network system characterized by determining the priority of the printer equipment of ** for print-data transmission, performing a selection inquiry of decision to said terminal unit, and carrying out terminal decision of the printer equipment of ** for [said] print-data transmission based on the selection information of said terminal unit.

[Claim 5] In either of claims 1-4 to said equipment information The version information of the data-processing program memorized by the memory of said printer is included. Said server Based on said version information, the need for renewal of the version of the data-processing program memorized by the memory of said printer is judged. When it is judged that renewal of a version is required A means to transmit the information for the renewal of a version of a data-processing program to said printer equipment is included further. Said printer equipment The network system characterized by including further a means to perform renewal of the data-processing program stored in the memory of a self-opportunity, and its version information if the information for the renewal of a version of said data-processing program is received from said server.

[Claim 6] It is the network system characterized by equipping any one of said the printer equipment with the function as said server in either of claims 1-5.

[Claim 7] The server of said accessed network system in which one network system of claims 1-6 was formed accessible from the external terminal unit is a network system characterized by transmitting said print data towards said printer equipment with which the interior of a system was determined.

[Claim 8] In the network system to which server equipment and two or more printer equipments were connected through the circuit said printer equipment Based on the printing command and image data which are transmitted from a terminal unit, the inquiry signal of device information is outputted through a circuit. It is based on the device information received from each device connected to the circuit according to said inquiry signal. A printer server means to transmit the command in its duty and the image data which takes charge towards the device which determined other servers or printer equipment which take charge of said data-conversion processing, and was determined, A printing means to print the print data transmitted from said determined device is included. A device besides the above The network system characterized by including an image-processing server means to perform data-conversion processing of the image data which it takes charge of based on said command in its duty, to generate print data, and to transmit these print data towards said printer equipment through a circuit.

[Claim 9] It is the information processor which can receive the image data the printing command transmitted from a terminal unit, and for printing. Based on the printing command from said terminal unit, the inquiry signal of device information is outputted through a circuit. A printer server means to determine the printer equipment of ** for print-data transmission based on the device information received from each device connected to the circuit according to said inquiry signal, The information processor characterized by including an image-processing server means to transmit the print data which perform data-conversion processing which changes the image data from said terminal unit into print

data, and are generated by this data-conversion processing towards said determined printer equipment through a circuit.

[Claim 10] The storage means which memorized beforehand the data-processing program for changing into print data the capacity information and the image data which express printing capacity for every printer equipment of a different classification in claim 9 is included. Said printer server means is based on the situation of the load of each of said printer equipment, and said capacity information read from said storage means corresponding to said classification information. It is the information processor which determines the printer equipment of ** for print-data transmission, and is characterized by said image-processing server means performing data-conversion processing which changes said image data into print data using the data-processing program corresponding to the classification of said determined printer equipment.

[Claim 11] In either of claims 9 and 10 said printer server means Based on the printing command from a terminal unit, through a circuit, even if there is little other server or printer equipment, the inquiry signal of device information is outputted towards one of devices. It is based on the device information received from other devices connected to the circuit according to said inquiry signal. One of devices is determined that there is little other server which shares said data-conversion processing, or printer equipment. The image data shared with an assignment command towards the determined device is transmitted. The image-processing server means of said server The information processor characterized by transmitting the print data which perform data-conversion processing of image data shared based on said assignment command, and are generated by this data-conversion processing towards said determined printer equipment through a circuit.

[Claim 12] In either of claims 9-11 said printer server means Based on the printing command from a terminal unit, through a circuit, even if there is little other server or printer equipment, the inquiry signal of device information is outputted towards one of devices. It is based on the device information received from other devices connected to the circuit according to said inquiry signal. The information processor characterized by determining the priority of the printer equipment of ** for print-data transmission, performing a selection inquiry of decision to said terminal unit, and carrying out terminal decision of the printer equipment of ** for [said] print-data transmission based on the selection information of said terminal unit.

[Claim 13] In either of claims 9-12 to said equipment information The version information of the data-processing program memorized by the memory of said printer is included. Based on said version information, the need for renewal of the version of the data-processing program memorized by the memory of said printer is judged. The information processor characterized by including further a means to transmit the information for the renewal of a version of a data-processing program to said printer equipment when it is judged that renewal of a version is required.

[Claim 14] The information processor characterized by answering the inquiry signal of the device information from other devices connected by the circuit in either of claims 9-13, and including a device information transmission-control means to transmit device information including the classification information on a self-opportunity to said server, and a printing means to print the print data received through a circuit.

[Claim 15] It is an information storage medium for controlling the information processor which can receive the image data the printing command transmitted from a terminal unit, and for printing. Based

on the printing command from said terminal unit, the inquiry signal of device information is outputted through a circuit. The information for determining the printer equipment of ** for print-data transmission based on the device information received from each device connected to the circuit according to said inquiry signal, The information storage medium characterized by including the information for transmitting the print data which perform data-conversion processing which changes the image data from said terminal unit into print data, and are generated by this data-conversion processing towards said determined printer equipment through a circuit.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the network system, information processor, and information storage medium which change and carry out the printout of the image data transmitted from the information terminal unit connected to the circuit to the print data corresponding to printer equipment.

[0002]

[A background technique and Object of the Invention] Printing the image information which connects two or more printer equipments on a network, for example, is dealt with with terminal units, such as a personal computer, today using either of said two or more printer equipments is performed.

[0003] The image information treated by said computer is the static image and dynamic image which are obtained through the Internet in many cases, and the image quality of such an image has many high definition things which have resolution there is many gradation and high.

[0004] And since it is necessary to perform processing which changes image data into print data according to the image quality searched for in order to print such high-definition image data, high capacity will be required of this processing.

[0005] However, it is rare for all the printer equipments that printer equipment various type is connected to a network in many cases, and were moreover connected to the network to have said throughput.

[0006] For this reason, the image-processing server for printer equipments with a low throughput is connected to said network, the image data outputted from a computer is once incorporated in this image-processing server, print data are generated, and transmitting to the low printer equipment of capacity and printing these print data through a circuit, is also considered.

[0007] However, if it does in this way, the relation of said image-processing server and printer equipment will be fixed. For this reason, the problem that it cannot be used efficiently produces two or more printer equipments which could not determine and use the optimal printer equipment in consideration of the operating condition of all the printer equipments connected to the network, consequently were connected on the network.

[0008] In addition, as mentioned above, when the relation between a server and each printer equipment was fixed and additional connection of the printer equipment new on a network is made, a server also

produces the problem that it cannot respond to new printer equipment flexibly.
[0009] This invention is made in view of such a technical problem, the place made into the purpose chooses the optimal printer equipment efficiently based on the idle status of the image data quality to print or each printer out of two or more printer equipments connected on the network, and it is in offer the network system, information processor, and information storage which can make it print.
[0010]

[Means for Solving the Problem] In order to attain said purpose, invention of claim 1 The server which receives the image data the printing command transmitted from a terminal unit and for printing, and at least one printer equipment connected to said server through the circuit are included. Said server Based on the printing command from said terminal unit, the inquiry signal of device information is outputted through a circuit. A printer server means to determine the printer equipment of ** for print-data transmission based on the device information received from each device connected to the circuit according to said inquiry signal, An image-processing server means to transmit the print data which perform data-conversion processing which changes the image data from said terminal unit into print data, and are generated by this data-conversion processing towards said determined printer equipment through a circuit, An implication and said printer equipment answer the inquiry signal of said device information. It is characterized by including a device information transmission-control means to transmit device information including the classification information on a self-opportunity to said server, and a printing means to print the print data from said image-processing server means received through a circuit.

[0011] Moreover, invention of claim 9 is the information processor which can receive the image data the printing command transmitted from a terminal unit, and for printing. Based on the printing command from said terminal unit, the inquiry signal of device information is outputted through a circuit. A printer server means to determine the printer equipment of ** for print-data transmission based on the device information received from each device connected to the circuit according to said inquiry signal, Data-conversion processing which changes the image data from said terminal unit into print data is performed, and it is characterized by including an image-processing server means to transmit the print data generated by this data-conversion processing towards said determined printer equipment through a circuit.

[0012] Moreover, invention of claim 15 is an information storage medium for controlling the information processor which can receive the image data the printing command transmitted from a terminal unit, and for printing. Based on the printing command from said terminal unit, the inquiry signal of device information is outputted through a circuit. The information for determining the printer equipment of ** for print-data transmission based on the device information received from each device connected to the circuit according to said inquiry signal, Data-conversion processing which changes the image data from said terminal unit into print data is performed, and it is characterized by including the information for transmitting the print data generated by this data-conversion processing towards said determined printer equipment through a circuit.

[0013] Here, there are image data obtained from the image data incorporated, for example from networks, such as the Internet, a video camera, and image output units, such as electrophotography, as said image data, image data read from various memory apparatus.

[0014] According to this invention, the image data for a printing command and printing is transmitted

towards a server from a terminal unit.
 [0015] A server outputs the inquiry signal of device information to each printer equipment etc. through a circuit based on said printing command first.

[0016] Each printer equipment connected to the circuit answers this inquiry signal, and transmits device information including the classification information on a self-opportunity to said server. Thus, based on the device information from each printer equipment obtained, said server determines the printer equipment of ** for print-data transmission. That is, the fewest printer equipment of the current latency time is determined as printer equipment of ** for print-data transmission out of the printer equipment which suited the image quality of image data. In addition, in this invention, since the server is directing printing of print data to each printer equipment, the latency time of each printer equipment mentioned above can be judged based on the data which a server has. Moreover, since two or more servers are directing printing, respectively when two or more servers exist, each server can judge the latency time of each printer equipment mentioned above based on the data which a self-opportunity and other servers have by adopting the configuration which transmits and receives data between each server if needed.

[0017] As explained above, the server of this invention can function as a printer server which determines the optimal printer equipment out of two or more printer equipments connected to the network, if a printing command is transmitted from a terminal unit through a circuit.

[0018] Next, this server performs data-conversion processing which changes the image data from a terminal unit into print data, turns the print data generated by this to said determined printer equipment, and transmits. That is, it functions as an image-processing server.

[0019] In addition, image processings, such as color transform processing which changes the color according to the model of the rendering processing which develops the processing and the alphabetic character which change RGB of image data into CMYK, and a line to a bit map, or printer, printer language translation processing, the processing that adds printer language are included in said data-conversion processing.

[0020] And the printer equipment with which these print data were transmitted carries out the printout of these print data through a printing means.

[0021] Thus, if the image data for a printing command and printing is transmitted to a server from a terminal unit, a server can choose the optimal printer equipment according to the idle status or the image quality of image data to print from two or more printers, and can make the printer equipment concerned transmit and print the print data by which data-conversion processing was carried out according to this invention.

[0022] Therefore, two or more computers connected on the network can be used flexibly and efficiently according to the classification and idle status, and moreover, even when new printer equipment is extended on a network, a server becomes possible [dealing with this flexibly], in order to determine the optimal printer based on the device information acquired according to an inquiry signal.

[0023] In this invention, in order to determine the optimal printer equipment according to the image quality of the image data to print out of two or more printer equipments connected on the network, it is desirable like invention of claim 2 to form a server.

[0024] Invention of claim 2 is set to claim 1. Namely, said server The storage means which memorized beforehand the data-processing program for changing the capacity information and the image data showing printing capacity into print data for every printer equipment of a different classification is

included. Said printer server means is based on the situation of the load of each of said printer equipment, and said capacity information read from said storage means corresponding to said classification information. The printer equipment of ** for print-data transmission is determined, and it is characterized by said image-processing server means performing data-conversion processing which changes said image data into print data using the data-processing program corresponding to the classification of said determined printer equipment.

[0025] In claim 9, invention of claim 10 for every [moreover,] printer equipment of a different classification The storage means which memorized beforehand the data-processing program for changing the capacity information and the image data showing printing capacity into print data is included. Said printer server means It is based on the situation of the load of each of said printer equipment, and said capacity information read from said storage means corresponding to said classification information. The printer equipment of ** for print-data transmission is determined, and it is characterized by said image-processing server means performing data-conversion processing which changes said image data into print data using the data-processing program corresponding to the classification of said determined printer equipment.

[0026] In this invention, the server has memorized beforehand the beforehand different capacity information and the beforehand different data-processing program of a proper of classification. [of printer equipment]

[0027] In here, capacity information is a program for said data-processing program carrying out data-conversion processing of the image data for printing according to the image quality, i.e., the number of gradation, and resolution for the printer equipments concerned including the data of the resolution of the printer according to various kinds, and generating print data.

[0028] And refer to the capacity information and idle status of a proper of printer equipment corresponding to the classification information concerned for a server based on the classification information included in the device information acquired from each device. And based on this capacity information and the idle status of each printer equipment, the printer equipment of ** for print-data transmission is determined. At this time, it is desirable the paper size which can be printed if needed in addition to said idle status and capacity information, and to take an ink residue etc. into consideration and to determine the printer equipment of ** for print-data transmission.

[0029] And a server performs data-conversion processing which changes image data into print data based on the data-processing program corresponding to the classification of the determined printer equipment. The print data of the number of gradation and a resolution solution set by the capacity of a printer can be generated by this, and a printout can be carried out from said determined printer equipment.

[0030] Invention of claim 3 is set to either of claims 1 and 2. Moreover, the printer server means of said server Based on the printing command from a terminal unit, through a circuit, even if there is little other server or printer equipment, the inquiry signal of device information is outputted towards one of devices. It is based on the device information received from other devices connected to the circuit according to said inquiry signal. One of devices is determined that there is little other server which shares said data-conversion processing, or printer equipment. The image data shared with an assignment command towards the determined device is transmitted. The image-processing server means of said server Data-conversion processing of image data shared based on said assignment command is

performed, and it is characterized by transmitting the print data generated by this data-conversion processing towards said determined printer equipment through a circuit.

[0031] Invention of claim 11 is set to either of claims 9 and 10. Moreover, said printer server means Based on the printing command from a terminal unit, through a circuit, even if there is little other server or printer equipment, the inquiry signal of device information is outputted towards one of devices. It is based on the device information received from other devices connected to the circuit according to said inquiry signal. One of devices is determined that there is little other server which shares said data-conversion processing, or printer equipment. The image data shared with an assignment command towards the determined device is transmitted. The image-processing server means of said server Data-conversion processing of image data shared based on said assignment command is performed, and it is characterized by transmitting the print data generated by this data-conversion processing towards said determined printer equipment through a circuit.

[0032] That is, when the amount of data of the image data used as the candidate for printing is large, it is difficult to take time amount too much, if this is all processed by one set of a server, and to perform quick printing in many cases. the case where quality image data is printed especially in large quantities -- capacity -- even when a high server is used, transform processing of the image data cannot be carried out to print data at high speed.

[0033] In this invention, even if there is little other servers or printer equipment connected to the circuit, the server which received the image data for a printing command and printing from entering outputs the inquiry signal of an assignment towards either, and collects the device information on other devices. And based on the collected information on a device besides these, the image data which determines one of devices and shares them with an assignment command towards the determined device of other servers which share data-conversion processing of image data, or printer equipment at least is transmitted.

[0034] In order to make data-conversion processing share with printer equipment at this time, it is necessary to choose printer equipment with the data-conversion throughput for changing image data into print data.

[0035] And it transmits towards the printer equipment determined through the circuit in a data-conversion processing deed of other devices which received such a conversion command and assignment image data, i.e., a server, and printer equipment of the image data which either at least shares, and the generated print data.

[0036] Thus, in order according to this invention to share image data by two or more sets of devices, to process it and to generate print data, it enables it to change a lot of image data into print data, and to carry out a printout at high speed.

[0037] Invention of claim 4 is set to either of claims 1-3. The printer server means of said server Based on the printing command from a terminal unit, through a circuit, even if there is little other server or printer equipment, the inquiry signal of device information is outputted towards one of devices. It is based on the device information received from other devices connected to the circuit according to said inquiry signal. The priority of the printer equipment of ** for print-data transmission is determined, a selection inquiry of decision is performed to said terminal unit, and it is characterized by carrying out terminal decision of the printer equipment of ** for [said] print-data transmission based on the selection information of said terminal unit.

[0038] Invention of claim 12 is set to either of claims 9-11. Moreover, said printer server means Based on

the printing command from a terminal unit, through a circuit, even if there is little other server or printer equipment, the inquiry signal of device information is outputted towards one of devices. It is based on the device information received from other devices connected to the circuit according to said inquiry signal. The priority of the printer equipment of ** for print-data transmission is determined, a selection inquiry of decision is performed to said terminal unit, and it is characterized by carrying out terminal decision of the printer equipment of ** for [said] print-data transmission based on the selection information of said terminal unit.

[0039] According to this invention, if there is a printing command from a terminal unit, a server will determine the priority of the printer equipment of ** for print-data transmission out of two or more printer equipments connected to the network, and will ask a terminal unit decision.

[0040] Thereby, a user can determine the optimal printer out of the printer equipment in plurality, and can make this print image data, and the user-friendliness of the printer equipment connected to the system will become good. It becomes possible to determine the printer equipment nearest to one's seat, for example, and to make this print image data especially of a user out of two or more asked printer equipments.

[0041] Invention of claim 5 is set to either of claims 1-4. To said equipment information The version information of the data-processing program memorized by the memory of said printer is included. Said server Based on said version information, the need for renewal of the version of the data-processing program memorized by the memory of said printer is judged. When it is judged that renewal of a version is required A means to transmit the information for the renewal of a version of a data-processing program to said printer equipment is included further. Said printer equipment If the information for the renewal of a version of said data-processing program is received from said server, it will be characterized by including further a means to perform renewal of the data-processing program stored in the memory of a self-opportunity, and its version information.

[0042] Invention of claim 13 is set to either of claims 9-12. To said equipment information The version information of the data-processing program memorized by the memory of said printer is included. Based on said version information, the need for renewal of the version of the data-processing program memorized by the memory of said printer is judged. When it is judged that renewal of a version is required, it is characterized by including further a means to transmit the information for the renewal of a version of a data-processing program to said printer equipment.

[0043] For example, when the version of the data-processing program memorized in the memory of printer equipment judges whether it is in agreement with the version memorized by the memory of a self-opportunity and judges that it is not in agreement in parallel to data-conversion processing actuation, said server turns the information for version up of a data-processing program to printer equipment, and you may make it transmit.

[0044] Since according to this invention the program for the image processings in each printer equipment is also upgraded to coincidence in case print data are transmitted towards printer equipment from a server, the whole system is always unified by the program of the newest version, and it can carry out movable [of the whole system] efficiently.

[0045] Invention of claim 6 is characterized by equipping any one of said the printer equipment with the function as said server in either of claims 1-5.

[0046] That is, this printer equipment can be operated also as one server of claims 1-5 by using the high

printer equipment of capacity.
[0047] Moreover, it is characterized by for invention of claim 14 answering the inquiry signal of the device information from other devices connected by the circuit in either of claims 9-13, and including a device information transmission-control means to transmit device information including the classification information on a self-opportunity to said server, and a printing means to print the print data received through a circuit.

[0048] According to invention of claim 14, said information processor can be served also as a client printer if needed.

[0049] The server of said network system with which one network system of claims 1-6 was formed accessible from the external terminal unit, and invention of claim 7 was accessed is characterized by transmitting said print data towards said printer equipment with which the interior of a system was determined.

[0050] If according to this invention said server is accessed from the exterior of a network system and a printing command and image data are transmitted using terminal units, such as a computer, the printout of this image data can be carried out using the printer equipment in a network system.

[0051] Even when said image data is especially transmitted to network systems, such as a country where the specification of printing differs, according to this invention, the printout of this image data is changed and carried out to the print data set by the specification of that country by said server.

[0052] It follows, for example, the network system of this invention is built in the office in the United States, and from Japan, when print data and image data are transmitted to the network system of said United States using a terminal unit, the printout of the transmitted image data will be changed and carried out to the print data suitable for U.S. specification.

[0053] In the network system to which, as for invention of claim 8, server equipment and two or more printer equipments were connected through the circuit said printer equipment Based on the printing command and image data which are transmitted from a terminal unit, the inquiry signal of device information is outputted through a circuit. It is based on the device information received from each device connected to the circuit according to said inquiry signal. A printer server means to transmit the command in its duty and the image data which takes charge towards the device which determined other servers or printer equipment which take charge of said data-conversion processing, and was determined, A printing means to print the print data transmitted from said determined device is included. A device besides the above Data-conversion processing of the image data which it takes charge of based on said command in its duty is performed, print data are generated, and it is characterized by including an image-processing server means to transmit these print data towards said printer equipment through a circuit.

[0054] When server equipment and two or more printer equipments are connected on the network, depending on a user's situation, printing is expected for image data of a specific airline printer in many cases. For example, the printout of the image data is carried out in many cases from the printer equipment installed in the location nearest to the terminal unit which a user uses.

[0055] However, said printer equipment is not necessarily equipped with sufficient data-conversion throughput.

[0056] If the image data which serves as a printing command and a candidate for printing from a terminal unit to the printer equipment concerned is transmitted according to this invention, the printer

equipment which received this will output the inquiry signal of device information towards other devices, and will collect information on other devices. And other servers or printer equipment which take charge of data-conversion processing are determined, and the command in their duty and image data are transmitted towards the device concerned.

[0057] Other devices which received this, for example, a server, and printer equipment perform data-conversion processing of image data based on said command in their duty, and answers said printer equipment in the print data generated by this.

[0058] And said printer equipment which received the printing command from the terminal unit carries out the printout of the print data answered from other devices.

[0059] Thus, even when there is not sufficient capacity for the printer equipment which a user wants to use, the system of this invention can use the data-conversion throughput of other devices connected to the network, can carry out the printout of the quality image data from the printer equipment concerned, and becomes what has very good user-friendliness for a user.

[0060]

[Embodiment of the Invention] Next, the gestalt of suitable operation of this invention is explained to a detail based on a drawing.

[0061] The rough configuration of the gestalt of the first operation of the network system concerning this invention is shown in drawing 1 -5.

[0062] As shown in this drawing, as for the network system 10 of the gestalt of this operation, two or more printer equipments 40a and 40b and 40c are connected to two or more sets of Servers 20A and 20B through the communication line 12. In addition, there is some printer equipment by which direct continuation is carried out to server 20B like 40d. Moreover, said printer equipment 40 is formed possible [extension] to the communication line 12 or the server 20 if needed.

[0063] Furthermore, the computer 14 which is an information terminal unit is connected to this network system 10 through the communication line 12.

[0064] Said computer 14 can access an external network system, for example, the Internet, through a communication line 12, and can receive data, such as the alphabetic character and static image which are information, a dynamic image, and voice. Furthermore, through various kinds of input/output media, image data can be incorporated or, also in itself, image data can be generated.

[0065] If the image data 100 which serves as a printing command and a candidate for printing from a computer 14 towards the server 20 of the request which exists on a network system 10 is transmitted as the network system of the gestalt of this operation is shown in drawing 1 The server 20 which received this command and data 100 determines one optimal set used for printing out of two or more printer equipments 40, and moreover, it carries out data-conversion processing and it carries out a printout to the print data which doubled image data with that image quality using the printer equipment 40 which had this determined.

[0066] The functional block diagram of said server 20 is shown in drawing 6 .

[0067] Signal ON **** 22 to which the server 20 of the gestalt of this operation transmits and receives data through a communication line 12, The data-processing section 24 constituted using CPU etc., and the program memory 26 various programs of operation were remembered to be, The processed-data storage section 28 which memorizes the print data generated by carrying out data-conversion processing of the image data, The data-processing program for generating print data consists of the capacity data

storage section 30 which memorized the capacity information on the printer equipment proper of a different class, and image data including the program memory 36 for data processing memorized for every various printer equipments.

[0068] It sets here and ID which specifies the model of various kinds of printer equipments as capacity information on a printer equipment proper, and the resolution corresponding to this and other capacity data are memorized by said capacity data storage section 30 for every classification of printer equipment. Furthermore, with the version data, the data-processing program memorized by said program memory 36 is matched with ID which specifies the model of various kinds of printer equipments, and is memorized.

[0069] And the server 20 of the gestalt of this operation is accessed through a communication line 12 to directions of an operator or the host computer which is not illustrated periodically, and downloads information, such as ID of the printer newly put on the market and capacity information corresponding to this, and a data-processing program, with the version information into the capacity data storage section 30 and said program memory 36.

[0070] Said data-processing section 24 functions based on the program for data-conversion processing memorized in the program of operation memorized in program memory 26, and said program memory 36 as the printer server section 32 and the image-processing server section 34.

[0071] Said printer server section 32 outputs the inquiry signal of device information towards the printer 40 and other servers 20 which constitute a network system 16 based on the printing command from a computer 14. And according to this inquiry signal, the printer equipment 40 of ** for print-data transmission is determined based on the device information received from each device so that it may mention later.

[0072] The resolution of each printer memorized in the capacity data storage section 30 based on ID specifically contained in the device information answered from each printer equipment 40 according to said inquiry signal is judged, and printer equipment with the resolution according to the image quality of image data is sorted out. Next, the latency time to [out of the printer equipment sorted out] printing initiation of each printer is judged, and priority is determined in order of [fewest] the latency time. And the highest printer equipment 40 of priority is determined as a ** for print-data transmission.

[0073] In addition, the printer server section 32 transmits the information on this priority towards a computer 14 through a communication line 12, and you may make it make a user determine the printer equipment of ** for print-data transmission if needed. In this case, the information on the printer chosen by the user using the computer 14 is answered through a communication line 12 to a server 20, and the printer server section 32 performs terminal decision of the printer equipment 40 of ** for print-data transmission based on this reply data.

[0074] Using the program for data-conversion processing corresponding to ID of the determined printer equipment 40, said image-processing server section 34 changes image data into print data one by one, and writes the changed print data in the sequential-processing data storage section 28. And the sequential output of the print data written in this processed-data storage section 28 is carried out towards the printer equipment 40 of ** for print-data transmission through a communication line 12.

[0075] In the network system 10 of the gestalt of this operation, the server 20 is performing printing control of each printer 40 fundamentally. For this reason, a server 20 can judge the present latency time of each printer equipment 40 from the data in the processed-data storage section 28 of the server

concerned, when only one set exists. Therefore, what is necessary is just to refer to the data in this processed-data storage section 28, when the printer server section 32 mentioned above carries out priority attachment of the printer equipment of ** for print-data transmission.

[0076] moreover, the capacity the case where printing of each printer 40 is shared and controlled using two or more sets of Servers 20A and 20B to be shown in drawing 1 , and in two or more more printer equipments 40 -- the function as the image-processing server section may be given to high printer equipment In such a case, the printer equipment 40 which functions as each servers 20A and 20B and a server is formed so that the data showing what throughput of printing is performed may be turned to the printer server section 32 concerned and current each printer 40 may be answered according to the inquiry signal from the printer server section 32 mentioned above.

[0077] Thereby, the printer server section 32 can judge the latency time of each printer equipment 40 correctly, and can set up correctly the priority of the printer equipment of ** for print-data transmission.

[0078] The functional block diagram of said printer equipment 40 is shown in drawing 7 .

[0079] The signal I/O section 42 by which the printer equipment 40 of the gestalt of this operation was connected to the communication line 12, The data-processing section 44 constituted using CPU etc., and the program memory 48 the program of operation as a printer was remembered to be, In order to memorize the print data transmitted from a server, it is constituted including the print-data storage section 50, the printer information storage section 52 ID which specifies the part number (model name) of the printer of a self-opportunity was remembered to be, and the printing section 46 which performs actual printing based on print data.

[0080] Said data-processing section 44 is constituted so that it may function based on the program memorized by program memory 48 as the device information transmission-control section 56 and a printing control section 58.

[0081] In addition to this, said device information transmission-control section 56 transmits towards a server 20 with ID of the self-opportunity memorized by the printer information storage section 52 according to the inquiry signal from the printer server section 32 of a server 20 mentioned above by making required information into device information. In here, there are said size of the form which can print a self-opportunity as information required in addition to this, a residue of the ink for printing, etc. When [at which it mentioned above] it asks and a signal is received, the data-processing section 44 checks the hardware of printer equipment, and the size and the ink residue of said form are constituted so that it may detect each time.

[0082] In addition, when operating printer equipment 40 with the image-processing server section 34 similarly so that it may mention later, it is formed so that the version information of the program for data-conversion processing memorized by program memory 60 may be included in said device information and it may transmit to a server 20.

[0083] Moreover, said printing control section 58 is formed so that the printing section 46 may be controlled and sequential print-out of said print data may be carried out, while writing in the print data transmitted from the image-processing server section 34 of said server 20 into the print-data storage section 50 which functions as a buffer.

[0084] In addition, fundamentally, if it has the above configuration, it is enough, but if needed, the printer equipment 40 of the gestalt of this operation may form these printer equipment 40 so that it may have the same function as the image-processing server section 34 of a server 20. In this case, in addition

to said configuration, printer equipment 40 is constituted including the program memory 60 and the processed-data storage section 62 for data-conversion processing.

[0085] According to the resolution of a self-opportunity, the program for the data-conversion processing for carrying out transform processing of the image data to print data is memorized with the version information by said program memory 60.

[0086] Moreover, when allowances are in the capacity of this printer equipment 40, the program for carrying out transform processing of the image data to print data into said program memory 60 according to the resolution of the printer equipment of a different type from a self-opportunity and its version information may be memorized.

[0087] And said data-processing section 44 functions as an image-processing server means to change image data into print data based on the program for data-conversion processing memorized in said memory 60, and carries out the sequential storage of the changed print data into the processed-data storage section 60.

[0088] Therefore, even when a self-opportunity is specified from a computer 14 and a direct printing command and image-processing data have been transmitted, the printer equipment 40 constituted in this way can change image data into print data, without minding a server 20, and can carry out the printout of this using the printing section 46.

[0089] Furthermore, when the image data shared [which shares and assignment-orders it] from a server 20 has been transmitted so that it may mention later, this type of printer equipment 40 changes into print data the image data shared according to this assignment command one by one, and it is formed so that sequential transmission may be carried out towards the printer equipment 40 specified by the server.

[0090] Thus, by carrying out by sharing the processing which changes image data into print data, a server 20 and printer equipment 40 can carry out movable [of the whole system] efficiently, and can raise the printing speed further.

[0091] Next, the more detailed configuration of the network system 10 of the gestalt of this operation is explained.

[0092] The flow chart which shows the function of the server 20 of the gestalt of this operation is shown in drawing 8, and the flow chart which shows the function of the printer equipment 40 of the gestalt of this operation is shown in it at drawing 9.

[0093] As shown in drawing 1, the case where sequential transmission of the image data which serves as a printing command and a candidate for printing from a computer 14 towards server 20A is carried out as data 100 is assumed.

[0094] In this case, the printer server section 32 of server 20A performs actuation shown by the flow 1000 of drawing 8, judges the received data 100 to be a printing instruction, acquires this data (steps S10 and S12), and outputs the inquiry signal 110 of device information on a network (step S14).

[0095] Each printer equipment 40 on the network which received this inquiry signal 110 answers the inquiry signal 110 of device information, and as the flow 1100 of drawing 9 shows, it operates. That is, it judges that the received signal 110 asks each printer equipment 40, and it is a signal (step S100), and in ID of the self-opportunity memorized in the printer information storage section 52, the size of the form which can be printed, and the residue of ink, as shown in drawing 2, a letter is answered towards said server 20 as device information 120 (step S102). At this time, printer equipment 40 equipped with the

program memory 60 for data processing includes the version information of the program for data processing in said device information 120, and answers it.

[0096] The server 20 which received the device information 120 from each printer equipment 40 operates, as the flow 1200 of drawing 8 shows below.

[0097] That is, the printer server section 32 of a server 20 judges that the information 120 from each received printer 40 is the device information from the printer equipment on a network, and receives such device information 120 (steps S16 and S18).

[0098] And based on the device information 120 from each of this printer, the priority of the printer equipment 40 of ** for print-data transmission is determined (step S20). That is, printing capacity, such as resolution of each printer equipment 40, is judged, and the printer equipment 40 with which are satisfied of the quality of printing of image data is chosen from ID of each printer equipment 40. Even if it is printer equipment 40 with which are satisfied of the quality of an image at this time, the paper size contained in the device information 120 received, the printer equipment whose size of a form does not suit based on data, such as an ink residue, and the printer equipment with few ink residues are removed from an object. Next, priority is given to selected printer equipment 40. High priority is given to the short order of the latency time to printing initiation.

[0099] Thus, termination of the dominance ranking to the printer equipment 40 of ** for print-data transmission outputs the inquiry signal 130 of the printer equipment 40 used towards a computer 14, as shown in drawing 2 below (step S22).

[0100] If a user chooses printer equipment 40 responding to this inquiry, as shown in drawing 3, a selection signal 140 will be answered towards a server 20 from a computer 14, and the printer equipment 40 of ** for print-data transmission will be decided (step S24).

[0101] Next, using the program for data-conversion processing corresponding to ID of settled printer equipment 40, the image-processing server section 34 changes image data into print data one by one, and memorizes the changed print data to the processed-data storage section 28 (step S26).

[0102] In parallel to this transform-processing actuation, it judges whether the version of the data-processing section 24 of the program memorized in the memory 60 of settled printer equipment 40 corresponds with the version memorized in the data storage section 30 for processing of an image, and when it is judged that it is not in agreement, the program information 150 for version up is transmitted towards that printer equipment 40, as shown in drawing 3 (step S28).

[0103] Furthermore, this image-processing server section 34 transmits the print data 160 generated by the data-conversion processing mentioned above towards target printer equipment 40, as shown in drawing 4 (step S30).

[0104] The printer equipment 40 which received these data 150,160 operates, as shown in the flows 1200 and 1300 shown in drawing 9.

[0105] That is, if the program information 150 for version up is received from a server 20, printer equipment 40 will perform program for the data-conversion processing in program memory 60, and renewal of the version information, as a flow 1300 shows. In step S130, the received information judges that it is an image-processing program for version up, and, specifically, updates the data in memory 60 at step S132.

[0106] Next, if print data 160 are transmitted from a server 20, this printer equipment 40 will operate, as a flow 1200 shows. It specifically judges that the received data 160 are print data, this data is

memorized in the print-data storage section 50, and it prints using the printing section 46 (steps S110 and S112). In the gestalt of this operation, this printing section 46 and the printing control section 58 will function as a printing means.

[0107] Thus, since according to the system of the gestalt of this operation the program for the image processings in each airline printer 40 is also upgraded to coincidence in case print data are transmitted towards printer equipment 40 from a server 20, the whole system is always unified by the program of the newest version, and it can carry out movable [of the whole system] efficiently.

[0108] Moreover, it is desirable to carry out by the system of the gestalt of this operation sharing other servers and the printer equipment 40 which have a throughput when the throughput of the image data which a server 20 processes is big, and processing.

[0109] For this reason, the server 20 of the gestalt of this operation judges whether assignment processing is performed in step S60 shown in drawing 8.

[0110] That is, when it judges that it is better for the amount of data processing to perform assignment processing greatly based on the amount of data of the image data transmitted from the computer 14, its image quality, etc., the inquiry message of a throughput transmits towards (step S60), and other servers 20 and printer equipment 40 with a throughput, and the server 20 or the printer equipment 40 which shares processing based on the information acquired from each device by this message determines (step S62).

[0111] If it asks at step S62 and a message is specifically transmitted through a communication line 12, other servers will operate, as the flow 2000 of drawing 8 shows, and printer equipment 40 will operate, as the flow 1500 of drawing 9 shows. That is, it judges that other servers 20 and printer equipment 40 had an inquiry of a throughput in steps S40 and S140, respectively, and the information showing the data processing capacity of a self-opportunity is turned to a server, and it transmits (steps S42 and S142). At this time, ID of the printer equipment which can share a self-opportunity, the version information of a processing program, the information what load the current self-opportunity has, etc. are included in the capacity information transmitted towards a server 40.

[0112] The server 20 which received this information determines the device which shares data-conversion processing, i.e., other servers 20 and printer equipment 40, (step S62), and transmits the image data which each device shares towards an assignment device, and the address information of printer equipment 40 which transmits print data (step S64).

[0113] the version information of the program for data-conversion processing of each device by which the server 20 of the gestalt of this operation shares data-conversion processing on the occasion of transmission of such data -- ** -- it judges whether it is new, and if needed, the program for data-conversion processing of the newest version is turned to each device, and it transmits.

[0114] Next, a server 20 performs data-conversion processing which changes into print data the image data which a self-opportunity shares (step S66).

[0115] Moreover, the printer equipment 40 which other servers 20 which share conversion to the print data of image data operate as shown in the flows 2100 and 2200 of drawing 8, and shares processing operates, as shown in the flows 1300 and 1400 of drawing 9.

[0116] The data flow at the time of transmitting the data which accompany the image data which each shares with drawing 5 towards other server 20B and printer equipment 40a which share processing from said server 20A, and this as data 170B and 170C is shown. As mentioned above, the program for the

data-conversion processing for version up is included in these data 170B and 170C with version information if needed.

[0117] When version up information is included in data 170B, server 20B which shares processing updates the program for the data-conversion processing memorized in the memory 36 of a self-opportunity according to the flow 2100, and its version information (steps S50 and S52).

[0118] And the image data contained in this received-data 170b is changed into print data according to a flow 2200 (step S46), and print data are transmitted towards specified printer equipment 40b (step S48).

[0119] Similarly, printer equipment 40a which shares processing updates the program for the data-conversion processing memorized in the memory 60 of a self-opportunity according to the flow 1300, and its version information, when version up information is included in data 170C (steps S130 and S132).

[0120] And the image data contained in this received-data 170B is changed into print data according to a flow 1400 (step S122), and print data are transmitted towards specified printer equipment 40b (step S124).

[0121] Thus, the system of the gestalt of this operation shares the image data which serves as a processing object using Servers 20A and 20B and two or more printer equipment 40a, and processing changed into print data is performed in juxtaposition, the changed print data are turned to printer equipment 40b of ** for print-data transmission as data 160A, 160B, and 160C from each device, and it transmits.

[0122] And printer equipment 40b becomes possible [printing a lot of print data at high speed] by rearranging the print data by which sequential transmission is carried out based on page information etc., and memorizing them to the print-data storage section 50.

[0123] Moreover, the network system of this invention is not limited to said example, and various kinds of deformation implementation by within the limits of the summary of this invention is possible for it.

[0124] For example, in the system shown in drawing 1 , the image data for a printing command and printing can be transmitted from a computer 14 towards the printer equipment 40 of the request which constitutes a network system 10, and it can also form so that the printout of the image data may be carried out from the printer equipment 40 concerned.

[0125] If the network system shown in drawing 1 is specifically built, printer equipment 40c may exist next to a computer 14, and other printers 40a, 40b, and 40d may exist in the distant location. In such a case, there are many users who wish printing using nearby printer equipment 40c.

[0126] However, if the function to change image data into print data is in printer equipment 40c, it will be satisfactory, but when printer equipment 40c is cheap with an easy configuration, it does not have such a function in many cases.

[0127] For this reason, the printer which is not equipped with the capacity to change image data into print data, in the printer 40 which constitutes a system 10 consists of gestalten of this operation so that it may have the function shown by drawing 10 , and printer equipment 40 or a server 20 equipped with conversion capacity is constituted so that it may have further the function shown in drawing 11 .

[0128] Below, the concrete configuration is explained.

[0129] In the gestalt of this operation, printer equipment 40c which does not have the capacity to change image data into print data is constituted so that it may have a function as a printer server means shown by step S300-312 in drawing 10 , and a function as a printing means shown at step S314,316.

[0130] That is, if a printing command and image data are transmitted to printer equipment 40c from a

computer 14, printer equipment 40c will judge that the printing command was received at step S300, and will ask capacity towards other printers 40 or servers 20 on a network at step S302.

[0131] To this inquiry, as drawing 11 shows, responding to the inquiry mentioned above, other printer 40a or the server 20 which has a throughput turns the information on the throughput of a self-opportunity to printer equipment 40c, and transmits (steps S400 and S402).

[0132] Printer equipment 40c receives the information from other devices transmitted at step S402 (steps S304 and S306), and determines the server which requests processing, or printer equipment (step S308). And it transmits towards the device of the trustee which determined the image data transmitted from a computer 14 at step S308 (steps S310 and S312).

[0133] The device of the trustee which received this image data performs data-conversion processing which changes the image data which received into print data (steps S404, S406, and S408), turns the changed print data to printer equipment 40c, and answers a letter (step S410).

[0134] And printer equipment 40c will carry out the printout of this one by one, if these print data are received (steps S314 and S316).

[0135] Thus, even when a printing command and image data are transmitted from a computer 14 towards printer equipment 40c without the capacity to change image data into print data according to the system of the gestalt of this operation, image data is changed into print data using the capacity of other devices which exist on a network, and it becomes possible to carry out the print-out output of this.

[0136] Moreover, although explained to the communication line 12 which constitutes a network system 10 taking the case of the case where a computer 14 carries out direct continuation, an external computer can also consist of gestalten of said the operation of each so that it can access to a network system 10 through a server 20.

[0137] By doing in this way, it can prepare for an illegal invasion from the outside, and it becomes possible to raise the safety of a network system 10.

[0138] The gestalt of other operations of the network system of this invention is shown in drawing 12.

[0139] The network system 10 of the gestalt of this operation is formed accessible from the external computer 14. And like the gestalt of said operation, the server 20 of a network system 10 which was accessed from the external computer 14 and received a printing command and image data determines the printer equipment 40 of ** for print-data transmission, and carries out the printout of the image data from this printer equipment 40.

[0140] Especially, according to the gestalt of this operation, towards the network system 10 prepared for the U.S., for example, when transmitting a printing command and image data from the area where printing specification differs, for example, Japan, using a computer 14, it will become suitable.

[0141] By doing in this way, based on the printing command and image data which are transmitted from Japan, the accessed system 10 can perform data-conversion processing, can generate print data so that U.S. printing specification may be suited in the image data concerned, and it can carry out the printout of this using the optimal printer equipment 40.

[0142] Moreover, although the gestalt of said the operation of each explained taking the case of the case where a server 20 is formed in a network system 10, when printer equipment 40 with capacity high enough exists, a system 10 may be built so that the function as a server may be given to this printer equipment. Thus, if it is made to have a function as a server to printer equipment, if needed, it can act as a printer or a printer can be served as a server.

DESCRIPTION OF DRAWINGS

[Brief	Description	of	the	Drawings]
[Drawing 1]	It is the rough block diagram of the network system of the gestalt of this operation.			
[Drawing 2]	It is the rough block diagram of the network system of the gestalt of this operation.			
[Drawing 3]	It is the rough block diagram of the network system of the gestalt of this operation.			
[Drawing 4]	It is the rough block diagram of the network system of the gestalt of this operation.			
[Drawing 5]	It is the rough block diagram of the network system of the gestalt of this operation.			
[Drawing 6]	It is the functional block diagram of the server used for the gestalt of this operation.			
[Drawing 7]	It is the functional block diagram of the printer equipment used for the gestalt of this operation.			
[Drawing 8]	It is the flow chart Fig. of a server used for the gestalt of this operation.			
[Drawing 9]	It is the flow chart Fig. of the printer equipment used for the gestalt of this operation.			
[Drawing 10]	It is the flow chart Fig. of the printer equipment used for the gestalt of other operations of this invention.			
[Drawing 11]	They are the printer equipment used for the gestalt of other operations of this invention, or the flow chart Fig. of a server.			
[Drawing 12]	It is the rough block diagram of the gestalt of operation of others of this invention.			
[Description	of			Notations]
10	Network			System
12	Communication			Line
14				Computer
20				Server
22	Signal	I/O		Section
24	Data-Processing			Section
26	Program			Memory
28	Processed-Data	Storage		Section
30	Data	Storage		Section
32	Printer	Server		Section
34	Image-Processing	Server		Section
36	Program	Memory	for	Data-Conversion
40	Printer			Processing
44	Data-Processing			Equipment
46	Printing			Section
48	Program			Section
52	Printer	Information	Storage	
56	Device	Information	Transmission-Control	
58	Printing	Control		Section
60	Program	Memory	for	Data-Conversion
				Processing

[Translation done.]